
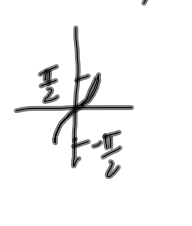


3.8 der of inverse trig functions

$y = \sin^{-1} x$ does not mean $\frac{1}{\sin x}$



$y = \sin^{-1} x$



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$$\begin{aligned} \frac{d}{dx} \sin^{-1} x &= \frac{1}{\sqrt{1-x^2}} & \frac{d}{dx} \cos^{-1} x &= \frac{-1}{\sqrt{1-x^2}} \\ \frac{d}{dx} \tan^{-1} x &= \frac{1}{1+x^2} & \frac{d}{dx} \cot^{-1} x &= \frac{-1}{1+x^2} \\ \frac{d}{dx} \sec^{-1} x &= \frac{1}{|x|\sqrt{x^2-1}} & \frac{d}{dx} \csc^{-1} x &= \frac{-1}{x\sqrt{x^2-1}} \end{aligned}$$

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$$\frac{d}{dx} \sin^{-1}(x^2) = 2x \cdot \frac{1}{\sqrt{1-(x^2)^2}} = \frac{2x}{\sqrt{1-x^4}}$$

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